REMARKS

Applicants submit this Amendment After Final Rejection Under 37 C.F.R. § 1.116 as a response to the final Official Action dated December 6, 2007. Applicants have cancelled independent claims 4 and 7, without prejudice or disclaimer of subject matter, and present new independent claims 10 and 11 in place of cancelled claims 4 and 7. New claims 10 and 11 are essentially modified versions of respective cancelled independent claims 4 and 7, the modifications rendering the subject matter clearer, and more readily discernable in view of the prior art. Claims 5, 6, and 8, 9 are amended to change their dependency to depend from new claims 10 and 11, respectively. No new matter is added.

In more detail, new independent claims 10 and 11 are substantially equivalent in scope and subject matter to the scope and subject matter of cancelled claims 4 and 7, but in a modified form to better distinguish which claim elements reside in the image pickup system of the endoscope, and the image processing unit to which the endoscope is attached during endoscopic imaging system operation. Claim 10 presents the subject matter of cancelled claim 4 in a form where the image pick-up system is called out as part of an endoscope apparatus, the endoscope apparatus including the image pickup system as one part of an endoscopic imaging system, which further comprises an image processing unit. Claim 11 presents the subject matter of cancelled claim 7 in a form where image pickup system is called out as part of an endoscope apparatus, the endoscope apparatus and image pickup system including first and second image pickup

elements being part of an endoscopic imaging system which further comprises a camera control apparatus.

Applicants respectfully submit that claims 5, 6 and 8-11 are patentably distinct from the references cited in the final rejections under 35 USC §103(a). Reconsideration of the final rejections in view of the claims amendments, new claims 10 and 11, and the below remarks is respectfully requested.

Response To Rejections Under 35 USC §103(a)

Claims 4-9 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,196,928 to Karasawa, et al. (Karasawa) in view of U.S. Patent No. 5,255,092 to Loonen in further view of U.S. Patent 6,466,256 to Takahashi. et al. (Takahashi).

With respect to claim 4, the Examiner states that Karasawa teaches **I)** an image pickup element that constitutes one image-captured surface by arranging a plurality of scanning lines having a first number of pixels **(CCD 24a, provided on endoscope 2A; col. 3, lines 38-42)**;

II) a drive circuit for outputting, to the image pickup element, a drive signal with a first frequency based on the first number of pixels for sequentially reading an image-captured signal image-captured on the image captured surface of the image pickup element for every scanning line **(25a of video processor 5a; col. 3, lines 43-45)**;

III) a line memory having a memory capacity, which can store one scanning line of image-captured signals read from the image pickup element **(26; col. 3, lines 47-65)**;

IV) a writing signal generating circuit for outputting a writing signal with the first frequency to the line memory for writing the image-captured signal to the line memory **(25d; col. 3, lines 47-65)**;

V) a reading signal generating circuit for outputting a reading signal with a second frequency, which is higher than the first frequency, to the line memory for reading image-captured signals stored in one scanning line **(25e; col. 3, lines 47-65)**; and

VI) a video signal processing circuit for performing video signal processing on the image-captured signals read with the second frequency from the line memory **(25; col. 3, lines 43-47)**.

Cancelled independent claim 4, and newly presented claim 10 call out **VII)** an oscillator for generating a clock signal having a preset frequency, and **VIII)** a frequency dividing circuit which divides the clock signal to generate a clock signal with the first frequency for the drive circuit which enables the drive circuit to generate the drive signal, the frequency dividing circuit being provided in the endoscope, incorporated by the Amendment Under 37 C.F.R. dated September 12, 2007. While the Examiner has not mentioned these claim elements with respect to Karasawa, the Examiner indicates what he understands to be the difference between Karasawa and the invention of claim 4 (new claim 10) in that Karasawa fails to disclose reading a signal with a second frequency which is higher that the first frequency, and that Karasawa fails to disclose the **VIII)** frequency dividing circuit.

With all due respect, claim 4 (and new claim 11) calls out a **V)** a reading signal generating circuit for outputting a reading signal with a second frequency, which is higher than the first frequency, to the line memory for reading image-captured signals stored in one scanning line. The Examiner indicated that same circuit is found as element **25e.** By stating that Karasawa does not include applicants' signal for reading a second frequency higher that the first means that Karasawa does not include a **V)** a reading signal generating circuit for outputting a reading signal with a second frequency, so that Karasawa actually fails to disclose:

V) a reading signal generating circuit for generating and outputting a reading signal with a second frequency, which is higher than the first frequency, to the line memory for reading image-captured signals stored in one scanning line therein, which second frequency reading signal derived from the clock signal with the preset frequency,

VII) an oscillator for generating a clock signal having a preset frequency, and

VIII) a frequency dividing circuit which divides a clock signal at a preset frequency and supplied by the image processing unity to generate a driving clock signal for the drive circuit at the first frequency used by the drive circuit to generate and output the pickup drive signal.

The Examiner continues, stating that Loonen teaches that prior art computing systems cannot accurately adjust a clock frequency, and to address this shortcoming, Loonen discloses "reading a signal with a second frequency which is higher than the first write frequency" **(col. 3, lines 40-50).** Applicants agree that Loonen's clock 1, of Fig. 2 provides a signal f2 for reading from memory 11, but memory 11 is in Loonen's pickup

device, as distinguished from the claimed line memory, which resides in applicants' image processing unit, and NOT in applicants claimed endoscope (apparatus). For that matter, Loonen's pickup device is constructed and intended to operate with an x-ray image intensifier 24, not with an endoscopic imaging system. Signal f2 is generated by VCO 2 of clock 1 in response to a synchronization signal generated by synchronization pulse generator 9, in response to a clock signal at frequency f2 generated by oscillator 7. Loonen's clock 1, VCO 2, oscillator 1 and synchronizing pulse generator 2 together may generate signal f2, at a higher frequency than f1, but the combination is not equivalent to applicants claims reading signal generating circuit.

Applicants reading generating signal circuit is part of the image pickup system while applicants' oscillator is part of the image processing unit, as claimed. Neither applicants' nor Karasawa's reading signal generating circuits include Loonen's synchronizing pulse generator, or like device, so that the reading signal with second frequency f2 generated and output by applicants' claimed reading signal generating circuit could not be generated by combining Loonen with Karasawa. Hence, Loonen does not disclose applicants' reading generating signal circuit.

The Examiner continues by stating that Takahashi teaches that feeding a digital signal to a remote peripheral is not important, and discloses an apparatus with an oscillator for generating a clock signal with a present frequency in a camera control unit with a frequency dividing circuit **(signal fo from VCO 48 divided by frequency demultiplier 50 to fo/n and presented to phase comparator 46; col. 10, lines 1-5)**.

Using a frequency demultiplier such as Takahashi's realizes a frequency that is necessarily **less** that the preset frequency, where applicants' claimed reading signal generating circuit generates a signal at a frequency greater than the preset frequency. Hence, the structure in Takahashi asserted by the Examiner to be equivalent to applicants' claimed reading signal generating circuit cannot be equivalent if it does not provide the same output signal required for inventive operation as claimed.

The Examiner, with respect to cancelled independent claim 7, asserts that Karasawa teaches adding a second image pickup system with all of the circuitry as asserted in the rejection of independent claim 7 at col. 2, lines 58-68. Applicants respectfully disagree in that they have read col. 2, lines 58-68 and find that it describes Fig.1, which shows parent and child endoscopes, and parent and child video processors. Neither Fig. 1 nor the cited text mentions two image pickup systems.

Applicants respectfully assert, therefore, that the hypothetically combined references, whether taken alone or in any combination, fail to teach, suggest or render obvious each and every feature of the invention as set forth in newly presented independent claims 10 and 11, which as stated, comprise the same scope and subject matter of cancelled independent claims 4 and 7, respectively.

Specifically, none of the references teach an endoscopic imaging system comprising and endoscope apparatus and image processing unit, where the endoscope apparatus includes a novel image pickup system including a frequency dividing circuit

that receives a clock signal at a preset frequency from a clock comprising the image processing unit (NOT the endoscope apparatus) to generate a drive signal at a first frequency, a write signal at the first frequency and a read signal at a second frequency. Additionally, none of the references teach that the first or second frequency is generated in the image pickup system based on the number of pixels in line memories included in the image processing unit.

The inventors recognized that multiple different types of CCDs, i.e., pickup elements, could be included in an endoscopic imaging system, where each CCD could have different numbers of pixels, particularly in a case where different endoscope apparatuses, having different image pickup systems with different CCDs may be detachably connected and interchanged in an endoscopic imaging system. For that matter, the inventors also recognized that image pickup elements cannot be accurately driven unless the elements are applied with a drive signal based upon the number of pixels comprising each line.

Therefore, the claimed invention includes a frequency dividing circuit for use with each image pickup system that operates upon a clock signal generated in and provided by a clock in the image processing unit of the endoscopic imaging system. The claimed frequency dividing circuit enables the invention to produce a drive signal that corresponds to the particular image pickup device provided in the endoscope. The drive signal takes into account a varying number of pixels between varying image pick-up devices.

The claimed frequency dividing circuit receives a signal at a preset frequency from the clock in the image processing unit to drive image pickup in the image pickup system (in the endoscope apparatus), and for use by a writing signal generating circuit for generating a writing signal to write image data to the line memory and a reading signal generating circuit for reading image data from the line memory. The line memory resides in the image processing unit of the endoscopic imaging system, as well as the clock. The clock signal is based on the number of pixels in the image pickup element, and generated in the image processing unit to correlate timing of image pickup unit operation with the clock in the signal processing unit, and the number of pixels in each line of the respective image pickup surfaces. The claimed frequency dividing circuit reduces the scale of circuitry required by the image processing unit because the system is able to perform the processing in the image processing unit without modifying the system timing.

None of the references disclose the frequency dividing circuit as claimed, nor teach or suggest the structural and functional relationship between the clock's preset frequency and number of pixels. Karasawa does not teach the claimed configuration, and Loonen and Takahashi fail to cure the Karasawa deficiencies. Applicants respectfully submit, therefore, that the hypothetical combination of the cited references fails to teach, suggest or render obvious, each and every limitation of independent claims 10 and 11, which are equivalent in scope and subject matter to cancelled independent claims 4 and 7. Accordingly, independent Claims 10 and 11 are patentably distinct from the cited

references. Claims 5, 6 and 8, 9 are patentable based upon their dependency from claims 10 and 11, respectively, in view of at least the above-identified analysis.

Additionally, Applicants submit that Claim 5 is separately patentable over the cited combination because the combination fails to teach that the horizontal enlargement or reduction is based on a ratio between the first frequency and the second frequency, as recited. Karasawa only suggests that enlargement can occur. See Col. 5, lines 1-8, but does not suggest the claimed basis.

For all the foregoing reasons, the Applicants respectfully request the Examiner to examine and process new independent claims 10 and 11, withdraw the rejection of claims 5, 6 and 8-9 under 35 U.S.C. § 103(a) in view of the cited references in any combination, and allow each of claims 5, 6 and 8-11.

Conclusion

In conclusion, the Applicants believe that the above-identified application is in condition for allowance and henceforth respectfully solicits the Examiner to allow the application. If the Examiner believes a telephone conference might expedite the allowance of this application, he is respectfully invited to call the undersigned at (516) 913 4666.

Respectfully submitted,

John F. Vodopia
Registration No: 36,299
Attorney for applicants

SCULLY, SCOTT, MURPHY & PRESSER, P.C.
400 Garden City Plaza -Suite 300
Garden City, New York 11530
(516) 742-4343

JFV: tb/vh